The DNA Marker Assisted Introgression of Blast Resistant Genes (*Pita, Pikh, Pitp(t)* of *Tetep* variety into Local Rice Blast susceptible cultivar *Bg94/1*

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Rice blast, caused by the fungal pathogen *Magnaporthe grisea* (anamorph- *Pyricularia grisea*) is the major rice disease in 85 countries across the world. Rice blast is controlled usually by use of fungicides resulting in high production costs and environmental pollution. Recent achievements made in DNA marker aided technology may provide new ways for developing durable blast resistant varieties with desirable traits in rice. This research summarizes the progress and achievement made in introgression of blast resistance genes of resistant variety *Tetep* (*Pita, Pikh and Pitp(t)*) into local susceptible cultivar *Bg94/1* which possess important agronomical traits.

Tetep and *Bg94/1* were selected as the donor and recurrent parents. The seeds of traditional Vietnamese rice cultivar *Tetep* and local susceptible rice cultivar *Bg94/1* were obtained from RRDI Batalagoda. The selected rice seeds were grown in pots and maintained for 18-21 days. After 21 days the seedlings were transferred to a well-designed field. Fertilizer was added according to recommendations of RRDI, Batalagoda for two months. All plants were grown till flowering time, and at flowering time *Tetep* (donor) and mother parent *Bg94/1* (recurrent) were first crossed to obtain the F1 population. The F1 population was grown in the same method as for parents in the field, and the F1 plants were crossed with recurrent parent (*Bg94/1)* to produce first backcross population (BC1F2). Following the same procedure the back cross one generation plants were established in the field and crossed with recurrent parent in the subsequent season in order to obtain back cross two generation (BC2F3). Finally with same aforementioned protocol a back cross three population (BC3F4) was developed by crossing BC2F3 plants with recurrent parent plants (*Bg94/1*). Most of the plants of all three backcross populations were found to be highly resistant in conventional phenotypic screening method. Molecular genotyping with gene specific marker *YL155* (*Pita*), closely linked simple sequence repeats markers (SSR) *RM206* (*Pikh*) and *RM246 (Pitp(t)* confirmed the inheritance of aforesaid blast resistant genes of variety *Tetep* by BC3F4 backcross population of local *Bg94/1* plants, making them resistant to blast pathogen. These research findings can contribute immensely to rice breeding programs and be adopted to breed durable blast resistance in local rice varieties.

Financial support from the HETC Project of Ministry of Education is gratefully acknowledged.

References

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